Issues in Planning Off-line EBT for the WIC and Food Stamp Programs:

Interim Report of the Evaluation of the Wyoming Smartcard EBT Demonstration

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CHAPTER ONE

INTRODUCTION TO THE WYOMING EBT DEMONSTRATION

The future of benefit issuance in government assistance programs may lie with electronic benefit transfer (EBT), but no one knows how soon that future will be realized in each state, or exactly what form the new issuance systems will take. Federal legislation, state and federal budget constraints, developments in the food retail and electronic funds transfer industries, and emerging technologies will shape the decisions made by program planners. Meanwhile, each new test of an EBT system adds to the understanding of what applications work best in what situations, and what approaches are most cost-effective.

This report is based on the early experiences in a particularly innovative test: Wyoming's EBT demonstration, which uses smartcards and off-line technology to deliver benefits for the Special Supplemental Food Program for Women, Infants and Children (WIC) and the Food Stamp Program (FSP). Wyoming's PayWest demonstration system is distinguished by two key features:

- It is only the second use of off-line, smartcard technology in an EBT system. Most EBT systems use an on-line approach, which requires a telephone link to a central computer to authorize each purchase or cash withdrawal using EBT benefits. On-line systems use a magnetic stripe card, which stores only enough information to identify the cardholder and the relevant account. The smartcard, in contrast, carries the benefit account balance on the card itself. This permits off-line transactions, which occur without prior communication with a central database.

- It is the first EBT system to deliver WIC benefits.[1] Unlike previous programs served by EBT, WIC benefits do not have a specified dollar value, but take the form of "prescriptions" for particular food items or classes of items. Off-line smartcard technology is an attractive approach to EBT for WIC because of the lengthy and complicated transactions required to approve individual prescription items in a WIC purchase.

Supported by funding from the Food and Consumer Service (FCS) of the U.S. Department of Agriculture and from the State of Wyoming, the demonstration began late in 1993. The project is a joint effort between Wyoming's Department of Health Services, which operates WIC, and the

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[1] Technically, the first WIC EBT system was the predecessor to the current demonstration, a "proof of principle" pilot test that Wyoming conducted in 1991.

Department of Family Services (DFS), which operates the FSP. The state awarded a contract to National City Processing Company (NPC) to design, develop, implement, and operate the EBT system during the demonstration period.[2] Most of the design and development effort took place in 1994, and the demonstration system was implemented in the spring of 1995. The demonstration system serves all WIC and FSP clients in Natrona County, and also serves all WIC clients in six other counties.[3]

Under contract to FCS, Abt Associates Inc. is responsible for evaluating the demonstration. The evaluation's main charge is to compare the EBT system to the paper systems it replaces in terms of costs to the government and impact on the two programs' "stakeholders," particularly benefit recipients and food retailers. Evaluation findings on these topics are scheduled to be available in the summer of 1996.

This Interim Report is intended to provide early information that may be of interest to other states that are contemplating the adoption of EBT systems similar to Wyoming's, particularly systems that would serve the WIC program through off-line technology. The report provides a nontechnical overview of how the Wyoming system works. It also describes some of the issues that arose during the Wyoming design and development phase, issues that seem likely to be important in other states as well.

Overall, despite the complexity and innovative nature of the effort, the process of designing, developing, and implementing the Wyoming demonstration went quite smoothly. Early signs indicate that the system is operating well several months after implementation, and that most of the system's stakeholders view it favorably. We must emphasize, however, that the most important questions about the system's cost and effectiveness have not yet been answered, and that positive early signs may or may not be matched by final evaluation results.

EBT Background

The first EBT system, a demonstration system serving food stamp recipients only, was implemented in Reading, Pennsylvania, in 1984. A number of further demonstrations were conducted

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[2] Subsequently, NPC formed a subsidiary, Stored Value Systems, which now has responsibility for EBT systems.

[3] The counties in which EBT serves only WIC clients are Albany, Converse, Goshen, Laramie, Platte, and Niobrara.

over the next several years, mainly serving the FSP and related cash assistance programs such as Aid to Families with Dependent Children (AFDC). EBT is now permitted as an operational alternative for states, and statewide EBT systems for food stamps and AFDC were operating by the end of 1995 in three states (Maryland, New Mexico, and South Carolina). An EBT system in Texas delivers Social Security and Supplemental Security Income (SSI). Many other states are currently considering or in the process of putting EBT systems in place. In 1993, the Federal EBT Task Force was established to provide leadership in the nationwide development of EBT. Consistent with the strategy of the Task Force, several multi-state consortiums have formed to pursue EBT systems jointly.

With two exceptions, all current EBT systems use magnetic stripe cards and on-line technology. One exception is the Wyoming system described here. The other is a demonstration system in Dayton, Ohio. Since 1992, this system has issued food stamp benefits through off-line transactions utilizing an integrated circuit card, better known as a smartcard.

Evaluations of past EBT demonstrations have consistently found that benefit recipients, food retailers, and banks—the three key nongovernment players in benefit issuance systems—all prefer EBT to the paper issuance systems it replaces.[4] Recipients tend to consider EBT more convenient and secure. Retailers see less paper handling and value what they see as a reduction in fraud and abuse of food stamp benefits. Banks are happy to replace manual exception procedures for handling food stamp coupons with electronic procedures that are common in their other business. The evaluations have also generally indicated that EBT reduces food stamp benefit loss and the diversion of benefits to uses other than purchasing food.

The key question for EBT has been whether it can operate as cost-efficiently as the paper systems it replaces. The very first demonstrations of both on-line and off-line technology found EBT to be more costly, at least in part because of the limited scale and limited number of programs served in the early demonstrations. Subsequent on-line demonstrations found EBT cost levels comparable to or lower than those of the paper systems, but no larger-scale off-line systems have yet been tested.

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[4] *Evaluation of the Expanded EBT Demonstration in Maryland, Vols. 1-3.*

Purpose and Structure of the Report

This Interim Report has two general objectives. The first is to provide readers who are unfamiliar with EBT systems with a general understanding of how the Wyoming system works. The report does not describe the system's technical operations, but briefly reviews the role that each of the system's major stakeholders plays and the perspectives that the stakeholders have on the system (Chapter Two).[5] The stakeholders include WIC and FSP recipients, food retailers authorized to participate in the programs, local banks, state and local WIC and FSP program staff, and the EBT processor (NPC).

The second objective is to identify particular system features, options, and potentially problematic issues that states may need to bear in mind in proceeding toward an EBT approach such as Wyoming's. Chapter Three describes a half-dozen issues that emerge from a review of the design, development, and implementation process in Wyoming. It focuses particularly on issues that affect the WIC program, because the most important issues for food stamp EBT systems have been covered in other evaluations. The topics considered here include:

- The WIC transaction's complexity and how the Wyoming system is designed to handle it;

- The need to build and maintain a database of Universal Product Code (UPC) data on WIC-eligible products;

- The need for the WIC program data system that handles client certification and prescriptions to interface with the EBT system;

- The potential linkages between WIC nutrition education and the EBT process of benefit issuance;

- The need for coordination between the local and especially state agencies administering WIC and FSP; and

- The potential for using the smartcard to store health information on WIC recipients.

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[5] More technical discussions of the functions performed by EBT systems delivering WIC and FSP can be found in *Design Considerations in Joint EBT Systems for the Food Stamp Program and Special Supplemental Nutrition Program for Women, Infants, and Children*, Eugene J. Costa and Edith M. Smith, USDA Food & Consumer Service, Office of Analysis and Evaluation, July 1995. Details of the Wyoming system are described in a system design document, available in printed or electronic form from the Wyoming WIC office.

Chapter Four deals with the desire of food retailers for EBT systems to be integrated with their normal operations. This poses two major hurdles for an off-line WIC system. First, the system must be able to obtain UPC information from the store's scanning system in order to complete a WIC purchase transaction. This is a serious technical challenge, particularly because of the diversity of scanning and electronic cash register systems in place in food stores. Second, retailers want to be able to use the same equipment to conduct EBT and commercial electronic payment transactions. The challenge here stems from the current absence of industry standards for smartcards, which makes it impossible for a system designer to ensure compatibility with potential future commercial processes. This situation may be changing, as a major effort is underway within the industry to specify and adopt *de facto* standards for smartcard functioning, and FCS is developing complementary specifications for functions necessary to perform WIC EBT functions.

Finally, Chapter Five provides as much perspective as is currently possible on the sticky issue of EBT costs. Although it is not yet possible to compare the costs of the Wyoming EBT and paper systems, some of the component pieces are available and some useful perspective can be obtained from other demonstrations. The costs of issuing benefits through the paper systems in Wyoming are estimated at $2.85 per household per month for the FSP and $2.12 per household per month for WIC. These figures constitute the benchmarks against which EBT costs for the two programs must be compared. Prior demonstrations suggest that the EBT system may be able to meet these cost levels, although perhaps not at the small scale of the current Wyoming demonstration.

CHAPTER TWO

STAKEHOLDER PERSPECTIVES ON THE EBT SYSTEM

The fundamental purpose of the PayWest EBT system is to support purchase transactions made with food stamp or WIC benefits. At the heart of the system is the smartcard, a microprocessor chip card that holds benefit recipients' FSP and WIC account balances. The FSP balance is a dollars and cents amount, whereas WIC program balances are quantities of particular types of food, such as infant formula, milk, fruit juice, cereal, and peanut butter or beans.[1] Purchase transactions involve an exchange of information between the smartcard and the EBT terminal at the retail point of sale (POS) to: a) verify that an authorized person is using the card; b) determine whether the card holds an account balance sufficient to cover the intended purchase; and c) reduce the corresponding balance on the card by the amount or quantity of the purchase.

In order to perform these purchase transactions, the PayWest system supports several other types of transactions. To get recipients' benefits into smartcard account balances, the state sends benefit information to the "host" computer system operated by the EBT vendor, which in turn sends each recipient's benefit information to EBT terminals at three retail stores. When a recipient first visits one of the three stores after a new benefit cycle has begun, an exchange of information between the POS terminal and the smartcard updates the account balance(s) on the card.[2] At the end of each day, the retail store systems settle accounts with the host computer. Store computers send information on purchase transactions to the host computer; the host computer then authorizes credits to retailer bank accounts. The host also transfers information on purchases and issuances to central data files, providing a record of all FSP and WIC benefit activity to the state program offices.

The PayWest project is a collaboration between the Wyoming Department of Health Services, which administers the state WIC program, the Department of Family Services (DFS),

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[1] The WIC balance in a family's card reflects the combined prescriptions of all members of the household, translated into a series of food categories.

[2] Once benefits are recorded on the client's card, the client can shop at any store authorized to accept benefits for the specified program.

which administers the FSP, and the Department of Administration's Division of Computer Technology. The WIC program took the lead in planning and funding PayWest and managing the vendor contract. The Mountain Plains Regional Office (MPRO) of the USDA FCS played an important role in the design and development of the system. The National Processing Company (NPC), headquartered in Louisville, Kentucky, won the contract to design and operate the PayWest system. NPC, which is also the original contractor for the Dayton, Ohio off-line EBT demonstration, began working with state and local WIC and DFS staff on system design in late 1993. Implementation of the PayWest system began in February 1995, and the WIC and FSP caseloads in Natrona County were converted to EBT during March and April 1995.

In Natrona County, both the FSP and WIC are issuing benefits via EBT; in six other counties, only the WIC program is using EBT. All retailers in Natrona County who are authorized to accept either WIC or food stamp benefits do so through the PayWest system. This includes eight retailers authorized for both programs and 36 that are authorized for FSP only. An additional 35 retailers outside Natrona use EBT for WIC but not food stamps. Approximately 2,200 food stamp households and 3,300 WIC households are receiving benefits through the PayWest system.[3]

The PayWest system requires the participation of seven main stakeholders:

- *Recipients* of FSP and WIC benefits are issued household-level smartcards, which they use at retail stores to purchase food.

- *Retailers* are equipped with POS terminals, printers, and a controller microcomputer (PC) in order to process and get credit for FSP and WIC purchases.

- *Local WIC clinic staff* issue smartcards and enter client food package information into a PC, which communicates with the EBT host computer. Local staff also train recipients to use their smartcards, and help resolve any difficulties with the cards.

- *Local DFS staff* authorize benefits and schedule recipients for training and card issuance. A designated EBT staff person handles EBT problems with cards and benefits.

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[3] Natrona County residents who participate in both WIC and the FSP are counted twice in these figures.

- *State office staff* manage retailer participation in the PayWest system and are responsible for reporting to the federal government. The state WIC office manages a database of Universal Product Codes (UPC) for WIC food items. DFS generates daily and monthly FSP issuance files, which are transmitted to the system processor. State WIC and DSF staff establish overall policy and provide technical assistance to local offices.

- *The EBT processor*, NPC, maintains the host computer, which transfers benefit and transaction information between the DFS office, WIC clinics, and retailer terminals. NPC is responsible for the installation and maintenance of EBT terminals at stores and card management system software at WIC and DFS offices. NPC also manages a Customer Service Hotline, which assists recipients and retailers with EBT questions and problems. NPC provides daily and monthly reports on system activity.

- *Banks* submit and receive automated clearinghouse (ACH) transactions which transfer funds from the state's WIC and FSP accounts to retailers' accounts to cover the cost of WIC and FSP EBT purchases.

The following sections present a more detailed look at the role of each of the stakeholders and some of the special perspectives on EBT that each stakeholder has.

2.1 PAYWEST FROM THE RECIPIENT PERSPECTIVE

Each household participating in the WIC program in the demonstration area, or in the FSP in Natrona County, is issued a PayWest card. Natrona County households that receive both food stamps and WIC benefits are also issued only one PayWest card. FSP recipients go to the local DFS office, and WIC clients go to the WIC clinic, to receive a smartcard and training on using the EBT system.[4] Clients choose a secret personal identification number (PIN), and choose the three stores at which their benefits can be loaded onto their smartcards. Recipients can then make purchases with the PayWest card at any EBT retailer authorized to accept the specified benefits (WIC or FSP).

Recipients can keep track of the balance of benefits on their PayWest cards in four ways: (1) by keeping the receipts from previous WIC or food stamp purchases, which show beginning

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[4] Clients receiving both WIC and food stamp benefits receive their card and training from whichever program certifies them first. Those who were already participating in both programs when EBT began were trained at the WIC office.

and ending account balances; (2) by checking the card balance at EBT store terminals without making a purchase; (3) by taking the card to the local DFS office or WIC clinic to check the balance; or (4) by calling the PayWest Customer Service Hotline. Receipts from both balance inquiry terminals and purchase terminals list the WIC food package balance by food category and the FSP balance by dollar value remaining. The PayWest customer service hotline operated by NPC provides assistance to clients who have problems with or questions about the PayWest card.

The PayWest system offers WIC recipients more flexibility than Wyoming's paper system in two ways. First, it allows for partial purchase of WIC prescriptions, and second, it does not limit clients to shopping for WIC items at one store. In the Wyoming paper WIC system, a recipient normally receives three "checks" per month, each listing the food items that may be purchased with the check. Each check must be redeemed in a single transaction at a single specified store. If that store is out of one of the items on a check, the client must either forfeit the item or return at another time to do her WIC shopping.[5] With PayWest, all the WIC items for one month for all members of the household are loaded onto one smartcard, rather than separate checks. Clients can buy the items in their package in any combination, through any number of shopping trips during the month, at any WIC-authorized retail store with EBT.

Another convenience of PayWest is "remote replenishment." Recipients are normally required to visit the WIC clinic every second month for nutrition education, at which time WIC staff authorize release of the next period's benefits. In emergencies, such as snowstorms that prevent clients from reaching the clinic, WIC staff can authorize release of the benefits, which are transmitted to the normal retailer locations for posting to the recipients' cards.

With EBT, clients whose cards are lost or stolen can have their unused benefits replaced, after the EBT host computer issues a message preventing use of the old card at all terminals in the system. In the paper system, lost and stolen WIC checks are not replaced.

A client advisory group met with EBT officials during PayWest's development phase to discuss their concerns about EBT and to assist the state in publicizing the new system. Clients wanted to be sure that the PayWest system's processes were as simple as possible, so that recipients with physical or mental limitations could use the smartcard. Wyoming has made a

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[5] Quantities are specified on the checks, so clients must either buy the specified quantity of each item or forfeit any amount not purchased at that time.

special effort to provide training and support to recipients who need more help. For instance, an EBT training session was held on-site at a senior center for older FSP recipients. At the Natrona County DFS office, a PayWest terminal was installed for recipients who need extra training or practice, so that they can load benefits onto their cards with the assistance of a DFS staff member. WIC EBT training sessions were scheduled at lunchtime and in the evening to accommodate recipients' schedules. Terminals in some stores, initially installed too high for clients in wheelchairs, were subsequently lowered.

Early indications are that the recipients prefer the PayWest system to the paper check system. They appreciate the security, flexibility, and convenience of the card.

2.2   PAYWEST FROM THE MERCHANT PERSPECTIVE

In order to process PayWest transactions, retailers' checkout counters must be equipped with EBT terminals, PIN pads, and printers. Retailers must also have a controller PC with a telephone connection, typically located in the "back room." Customers wishing to make an EBT purchase identify themselves as EBT customers, put their card in the terminal, and enter their PIN. When the cashier has rung in the items, the balance on the card is updated and information on the purchase is stored in the PC for later transmission to the host computer.

WIC purchases can be simpler and less burdensome for retailers with EBT than in Wyoming's paper system. Under the paper WIC check system, store clerks have to make sure that items match the WIC prescription and that the total purchase does not exceed a limit price. Because the PayWest system matches each item's UPC code to the applicable category on the recipient's card, it removes the need for clerks to enforce WIC regulations and eliminates a source of human error in item-level verification.

At the end of each business day, the retailer initiates a settlement transaction with the host computer. The store's PC sends information to the host about the day's EBT purchases and other EBT actions. Retailers' bank accounts are credited by an automated clearinghouse (ACH) transaction within the next two business days.

The advent of EBT involves changes in the retailer's role as well as potential new costs and benefits. For example, retailers often see their role in food stamp purchases as including "enforcement" of FSP regulations, e.g., checking recipient identification and not allowing

recipients to make small purchases to generate cash change.[6] The EBT system verifies identity through the PIN match, and involves no cash change. Many retailers expect WIC transactions to be made more efficient by EBT. The paper WIC transaction is the most complex and time-consuming type of transaction handled by food retailers; EBT may speed transaction time and require less staff training than is needed for the paper WIC system. The electronic system may also eliminate some retail clerks' confusion about the rules and allowable purchases of the two programs.

A major advantage of EBT for retailers is the assurance of payment for all WIC transactions under EBT. State WIC agency staff review each paper transaction for proper signatures, and the use of benefits within the expiration date. Payment to retailers can be delayed or denied for such problems. Under EBT the retailer is certain of payment as long as the system has processed the WIC transaction.

In Wyoming, EBT's direct cost to retailers was minimal; the demonstration program provided funding for store equipment. Regardless of how funding is arranged, however, the EBT equipment can affect future equipment purchase or upgrade decisions made by retailers, because the EBT system is partially integrated with stores' electronic cash register (ECR) systems. Retailers also had to pay for the time spent by their employees in special EBT training sessions.

The Wyoming WIC Director recognized early in the EBT planning process the importance of involving food retailers. Mainly through the Rocky Mountain Food Retailers' Association, retailer input into the planning process was sought and retailers were informed of project activities. Retailer representatives attended system planning and design meetings. A Retailer Advisory Committee contributed to the design and development of the PayWest system and played a significant role in the decision to include the FSP as well as WIC in the system. Retailers preferred a joint FSP and WIC EBT system because they wanted the system to handle as many people and functions as possible. During the development phase of the PayWest project, retailers' main concern was the integration of EBT functions with store payment and scanning systems; this issue is covered in detail in the next chapter.

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[6] Food stamp coupons are denominated in whole dollar amounts. Retailers must give coins for any change that is due up to 99 cents. Recipeints are prohibited from making repeated small purchases to generate cash change.

2.3 PayWest from the Local WIC Clinic Perspective

WIC clinic staff are responsible for issuing smartcards to clients, training clients to use the PayWest system, and authorizing the issuance of benefits. During the WIC certification, staff place client identifying information and the client-selected PIN in the smartcard's memory, using the PC-based Card Management System. They usually train clients in group sessions that include a video and hands-on practice with their cards.

At the conclusion of training, WIC staff authorize the issuance of WIC benefits. The authorization goes to the host computer, which on the following day "stages" the benefits to the three retailers chosen by the recipient. WIC staff must subsequently authorize the client's benefit issuance as part of the bi-monthly nutrition education session.

Local WIC clinic staff also handle other card management functions and problems such as card replacement, restoration of lost benefits, PIN changes, and unlocking cards that have locked after multiple attempts to enter an incorrect PIN.[7] Frequent coordination with local office DFS staff is necessary to deal with issues involving clients who participate in both programs. Local WIC and DFS staff meet bi-weekly for this purpose.

For the WIC program, the PayWest system supports some functions beyond the actual issuance of benefits. The smartcard can store a limited amount of health information, including WIC certification data and immunization records.[8] WIC staff enter these data at certification and update them as necessary. When recipients transfer from one WIC location to another, staff at the new clinic read the data from the card rather than requesting a transfer of paper files.

The PayWest system also produces reports than can provide WIC staff with a precise record of the portion of each client's food package that is actually redeemed each month. Staff expect this information to be useful in individualizing nutrition counseling for WIC clients, although this practice was not implemented during the early months of operation. Because WIC benefits expire at the end of each month, the EBT system provides the state with a considerable improvement in its ability to monitor WIC financial outlays and manage caseloads.

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[7] "Locking" is a security function that makes it impossible to use the card after specified conditions occur.

[8]

Local WIC staff faced heavy demands during the EBT development and implementation phases. They needed to review documents, communicate with various parts of their communities, select clients for testing, prepare case files for conversion, and carry out numerous logistical tasks needed to move the system forward.

Local WIC staff have been strong advocates of EBT. They value the increased flexibility that the system offers to clients. They see a positive reduction in paper handling at the clinic, because they no longer prepare and distribute WIC checks and the accompanying folders required in the paper system. More generally, they feel that the electronic system will offer more functions and more opportunities to improve operations as it evolves in the future.

2.4 PayWest from the Local DFS Office Perspective

Like WIC clients, food stamp clients must receive their PayWest cards, be trained in how to use them, have their benefit issuance authorized, and have subsequent questions answered and problems resolved. Local DFS staff functions in the EBT system are somewhat more limited than WIC staff functions, however. Monthly food stamp benefit issuance is authorized at the state level by transmitting a benefit file to the host computer; local staff are involved only as they enter information from certifications or other case actions that change a client's food stamp allotment. Like WIC staff, local DFS staff must deal with issues regarding client account balances, lost or damaged cards, PIN changes, and misunderstandings of how the system works. (During the initial months, an NPC employee working in the DFS office performed some of these functions.)

Local DFS staff generally regard the advent of EBT as a positive change, but a less dramatic one than that seen by WIC staff. Food stamp coupons had been issued by mail, which resulted in substantial local office effort to deal with lost and stolen coupons, as well as fraudulent claims of mail loss. Staff value the greater security of EBT and expect a lower volume of problems to resolve.

2.5 PayWest from the Perspective of State Office Staff

Because WIC and FSP are administered by separate departments (the Department of Health Services and the Department of Family Services, respectively), building a joint EBT system required extensive collaboration. WIC and DFS staff worked together to shape the system design

and review design documents. During the implementation phase, local office and central office staff from the two programs met weekly to share information and discuss problems. The effort was made more difficult by budgetary pressure and a hiring freeze resulting from a general initiative to "downsize" the Wyoming state government.

State WIC Office

Nine people staff the Wyoming state WIC office. The WIC Director also serves as the EBT/Smartcard Manager; he played a lead role in generating support for a WIC EBT system in Wyoming. The state office manages the financial aspects of WIC, sets nutritional policy, manages retailer performance, and oversees statewide functioning of the WIC computer system. No WIC staff positions were added specifically for EBT implementation purposes, although two vacant positions were filled as a condition of FCS support for the demonstration project. WIC central office staff were stretched to the limit by the extra time and effort required for the two-year design, development, and implementation process. The burden eased when the system reached the steady-state operations stage in the summer of 1995.

The state WIC office performs three main functions in ongoing EBT operations. First, it manages the EBT processor contract, overseeing the services provided by NPC. This includes daily monitoring of system operations, reviewing monthly reports that monitor system activity, and dealing with any problems or issues that arise. Second, WIC state office staff provide technical support on EBT issues to the WIC clinics and to retailers.

The third function is to maintain the UPC database. As retailers get new products (or old products in new quantities) that should be eligible for WIC purchases, they forward the UPC code and other necessary data to the state WIC office. State staff must determine the appropriate WIC prescription category, update the UPC database, and transmit the information to the host computer so that purchases of the item can be authorized.

State staff have strongly advocated EBT, principally because of the benefits they feel it provides to recipients and local program operations. They see three additional benefits to the program at the state level. First, the accurate tracking of the quantity and dollar value of infant formula purchased with WIC benefits each month may give the state more leverage in negotiating infant formula rebates with manufacturers. Product tracking may also allow the state to negotiate

for rebates with manufacturers of other WIC food items. Second, PayWest provides a full accounting of the prices retailers charge for WIC items, which was not available with the paper system, and which will allow improved monitoring of possible error and fraud. Finally, PayWest gives the state more detailed and more immediate information on redemptions. This information will improve caseload management and funding estimation, a critical issue for the state WIC program, which must operate within a fixed funding level.

State DFS Office

The state DFS office performs two main functions related to issuing food stamp benefits in the EBT system. First, it transmits to the NPC host computer a monthly file indicating each participating household's allotment for the month (and daily files for issuances to new recipients and special issuances). NPC then posts each household's issuance to terminals at the three retailers that the recipient has selected for benefit pickup. The second major state office function is to monitor and reconcile data on benefit issuance and redemption provided in routine monthly NPC reports.

Adapting the state computer system to carry out EBT functions proved to be a substantial effort—more than anticipated—during the development phase. In ongoing operations, however, the most noticeable effect of EBT is to eliminate the tasks associated with physically preparing and mailing food stamp ID cards and monthly food stamp coupon packages to all households. The key EBT benefit seen by state office staff is the potential to reduce or eliminate the loss and fraud associated with the mail issuance system.

2.6 PAYWEST FROM THE BANK PERSPECTIVE

Local banks' functions in the EBT system are largely indistinguishable from functions they normally perform for commercial accounts. Banks daily receive credits for retailer accounts through electronic Automated Clearing House (ACH) transactions, a standard banking procedure.

One bank, NorWest, serves as the "concentrator" bank for EBT. The NPC host computer transmits to NorWest each day an electronic file indicating the credits due to each retailer. NorWest then initiates the ACH transactions that credit the retailers and debit the state WIC and food stamp accounts appropriately.

Banks have supported EBT because it replaces a set of largely manual procedures that are unique to WIC and FSP with electronic procedures used in the banks' "mainstream" business.

2.7   PayWest from the EBT Processor's Perspective

NPC was contracted to design, develop, implement, and operate the Wyoming EBT system. During ongoing operations, NPC acts as the hub of the EBT network. NPC receives benefit issuance information from the state and posts it to retailer terminals so that recipients can load benefits to their cards. NPC receives information on purchase transactions from retailer terminals, determines the credits due to retailers, passes that information to NorWest Bank, and updates an account history for each recipient. NPC performs customer service functions, maintaining a hotline to respond to recipient and retailer questions and servicing EBT terminals in the retail stores and local offices. Finally, NPC provides detailed reports to the state offices concerning system activity, financial summaries, and special issues of interest to the state (such as types of unredeemed WIC benefits).

Design and development involved preparing both the technical elements of the system (such as selecting the smartcard and terminals, writing software to perform all EBT functions, and testing and retesting the system) and the operating procedures (such as training procedures and user manuals for recipients, retailers, and state and local program staff). Implementation included installing equipment in retailer and local office locations, training system participants (program staff, retailers, and recipients), and resolving problems as they emerged during the startup phase. Some of the more difficult issues that arose during the design, development, and implementation process are discussed in the next two chapters. These are presented as "lessons learned." They should not diminish the significant achievement of Wyoming and its EBT vendor in implementing a technologically-advanced system with no major failures or delays.

CHAPTER THREE

LESSONS FROM SYSTEM DESIGN AND DEVELOPMENT

As the pioneer effort to develop and test an EBT system to handle both food stamp and WIC transactions, the Wyoming demonstration naturally encountered some difficult decisions and some problems that had not been fully anticipated. This chapter draws from that experience some of the issues that seem likely to confront other states that pursue EBT systems.

The chapter focuses principally on issues that involve the WIC program, for two reasons. First, previous demonstrations and their evaluations have documented EBT applications in the Food Stamp Program. Indeed, that extensive prior experience doubtless contributed to the fact that few of the significant challenges that emerged during the Wyoming demonstration were directly related to the FSP. Second, even if EBT had not been previously applied to the FSP, the most difficult technical challenges would probably be those posed by the nature of WIC transactions.

The discussion below covers six key issues:

- Handling the WIC prescription,

- Building and maintaining the UPC data file,

- Linking the WIC data system to the EBT system,

- Linking nutrition education to benefit issuance,

- Coordinating WIC and FSP operations, and

- Using the card for health status information.

Additional important challenges, which concern how to integrate the EBT system into food retailers' operations, are discussed in Chapter Four.

Despite the focus on technical issues, it is important not to lose sight of the substantial management challenge of developing and implementing an EBT system for WIC and FSP. An enormous number of tasks must be accomplished, competing points of view must be reconciled, plans must be developed, tentative designs must be reviewed, systems must be tested, and so on.

Wyoming staff urge that any state undertaking such an initiative appoint a full-time project manager for the duration of the design-development-implementation phases, and that additional program staff be partially relieved of normal operational duties to participate fully during critical periods.

3.1 HANDLING THE WIC PRESCRIPTION

Issuing WIC benefits via EBT is a more complex endeavor than issuing food stamp benefits via EBT. A food stamp benefit can be expressed as a single number, valued in dollars. A food stamp benefit account is augmented each month by a new issuance and decremented each time food is purchased. In contrast, WIC benefits are prescriptions for specified food items, each with an associated quantity in weight or volume terms, but not dollars. Items can be prescribed at the "category level" (such as one pound of peanut butter or legumes), at the "subcategory level" (one pound of legumes), or with a brand name (8 oz. cans of Prosorbee infant formula).

A participating WIC retailer may carry several hundred food items that are potentially eligible for WIC purchases, and because different retailers carry different items, the number of WIC-eligible items within even a small geographic area may be in the thousands. Thousands of additional items are not eligible for WIC, and sometimes the distinction between eligible and ineligible items is small. For example, a prescription for peanut butter allows the purchase of numerous brands but does not allow the purchase of "honey roasted" peanut butter.

With paper WIC checks, the retailer's cashier makes a judgment as to whether an item that a WIC recipient presents is eligible. The EBT system, however, makes this decision electronically. To do so, it must match the UPC code for an item presented by the recipient to a pre-established database of eligible UPC codes. More specifically, the item code must match a code that is allowed by that recipient's prescription—the peanut butter must not only be an eligible type and quantity, but that quantity of peanut butter must be part of that recipient's prescription.

To allow electronic decisions about item eligibility, NPC and the state WIC office developed a detailed categorization scheme for WIC prescriptions. This hierarchical system includes categories and subcategories. Every element of a WIC recipient's prescription must be one of these specified categories or subcategories. When the prescription specifies a particular

category or subcategory, any item that meets the general qualifications for that category/ subcategory is eligible, providing that it is in the allowed quantity. Exhibit 3-1 presents a summary of the food categorization scheme used by the PayWest system.

Exhibit 3-1

WYOMING WIC FOOD CATEGORIES AND SUBCATEGORIES

Category		Number of Subcategories	Examples of Subcategories
1	Milk	9	Whole milk, low-fat milk, skim milk
2	Cheese	1	Low-fat cheese
3	Eggs	0	
4	Juice	2	Concentrate, natural strength
5	Cereal	0	
6	Dry beans, dry peas, peanut butter	2	Dry beans/peas/peanut butter
7	Raw carrots	0	
8	Tuna	1	Packed in water
9	Infant cereal	0	
10	Infant juice	0	
11	Formula	78	Enfamil concentrate, Enfamil powdered, Similac concentrate, Similac powdered
12	Homeless juice	0	
13	Homeless beans	0	
14	Homeless tuna	0	
15	Canned milk	3	Evaporated whole milk, evaporated skim milk, Meyenberg goat's milk

NPC designed the PayWest smartcard to hold up to 24 different WIC account balances, where each balance represents a specific prescription element. Each household has one PayWest card that combines the benefits for all WIC recipients in the household. Each of the 24 account benefits represents the combined prescription for that type of food for all household members.

As part of this planning process, Wyoming sought input from other member states of the Western Governors Association (WGA). This was done to prepare the way for adoption of the PayWest system as the basis for a regional EBT system. In the process of coordinating with the other states, system developers became aware of the differences among the states in the definitions of food categories and subcategories, and came to see the divergent food categorization schemes used by states as a major barrier to interstate portability of WIC EBT benefits and further regionalization of WIC EBT. The PayWest food categorization, which reflects decisions coordinated across a group of five western states, may be suited to the needs of other states. NPC has suggested that, as future WIC EBT systems are developed, the adoption of a standardized approach to food categorization could reduce system design expenses and problems of interstate coordination.

3.2 BUILDING AND MAINTAINING THE UPC FILE

For the PayWest terminal to determine whether a WIC recipient can purchase an item, it must have access to a database that maps UPC codes to the WIC food categories tracked by the PayWest card. Building and maintaining that database was a critical and difficult aspect of implementing the PayWest system.

Project organizers learned that the UPC database is inherently cumbersome to compile and maintain. There are some 40,000 to 45,000 different items in a full-sized supermarket, of which perhaps 1,000 items are WIC-approved. The state's UPC database must contain multiple records for many items, because each record includes a maximum allowable price, which varies with the type and size of the store (there are four combinations of store type and size in Wyoming). As a result, the state's UPC database contains about 2,500 records on 1,260 different food items.

To build the original database, WIC staff visited each participating store to record the UPC codes for WIC-eligible items, using laptop computers in the store aisles. This labor-intensive approach was necessary because, even though some stores could provide computer files listing all

UPCs in their system, the product descriptions in the files were often insufficient to determine WIC eligibility of the item. Similarly, adding new items to the database has often required store visits by local WIC staff.

Many retailers and recipients experienced problems in the early months of implementation as certain items were rejected in attempted WIC purchases. The following problems that were encountered during implementation—though they have since been resolved—illustrate the complexity of using UPC data for EBT purposes.

(1)   *Compressed UPC codes*. A key problem was a misunderstanding between NPC and WIC staff about the need for records of "compressed" as well as "exploded" UPC codes.[1] WIC staff thought that the system automatically expanded the compressed UPCs. In fact, because stores use different algorithms for expanding compressed codes, it is sometimes necessary to have a number of different codes for a single item in the database.

(2)   *Incorrect units of measure*. It was not sufficient for the UPC to be present on the UPC database. The correct unit of measure had to be entered in the record. This was a nontrivial exercise for hundreds of items in dozens of different stores, especially because prescriptions are calibrated to a single decimal, whereas products are often packaged in ounces (i.e., sixteenths of a pound).

(3)   *Misunderstanding prescription balances*. The PayWest system receipt reports client balances at the category level, but some items are prescribed at the subcategory level. For example, a prescription for one pound of beans would appear on the receipt as "1 lb. peanut butter/beans." If the client tries to purchase peanut butter, the item will not be authorized, and both client and the checkout clerk may erroneously think there is a problem with the system or the UPC code. The receipt contains the prescription number, which theoretically enables a clerk to identify what foods items are authorized; however, few clerks had the

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[1] A Universal Product Code (UPC) is a 12-digit code used to identify products sold using bar-code scanners. The first digit signifies the type of product (e.g., general merchandise, variable-weight items, or coupons). The next five digits are manufacturer identifiers. Digits six through eleven are product identifiers. The final digit is a check digit, which allows a verification that the UPC has been read properly.

"Compressed" UPCs add an additional wrinkle to the development of a UPC database. Some UPCs are "zero-suppressed," i.e., zeros have been removed from the middle of the 12-digit sequence. The scanner picks up only eight digits, and the ECR uses an algorithm to re-insert the suppressed zeros. This "expanded" code is sent over the retailer's LAN and is the basis for approval of the item as a WIC-eligible purchase. In Wyoming, the WIC program has found that, at least in some cases, different stores use different algorithms, resulting in potential confusion about codes.

sophistication with the PayWest system in the early months to identify WIC prescription items at the subcategory level.[2]

(4) ***Problems with random weight items.*** These items, such as cheese or produce, are packaged in the store. The codes represent price information in some stores and weight information in other stores. The EBT system needs both price and weight, because the recipient's account balance is kept in terms of weight and the settlement record requires price information. NPC modified software to fix this problem: the system now prompts the cashier to enter price *and* weight for random weight items.

Although the UPC file was difficult to create, state-level management of UPC data, together with automated item-level authorization of transactions, has added a great deal of control over WIC purchases. Under the paper system, a checkout clerk, wishing to accommodate a customer and speed a transaction, may allow a customer to buy an ineligible item with WIC benefits. Now these judgments are out the retailer's control, much to the relief of most retailers and checkout clerks. The extra control, however, has come at the cost of early retailer frustration as well as considerable WIC staff effort to build and maintain the UPC database.

NPC suggested an alternative approach that would not require advance approval of new UPC codes. The idea is that retailers could approve the purchase of an item not in the UPC database that appears to be WIC-authorized. The sale would be completed and a request for adding the item to the WIC-authorized database would automatically be forwarded to the WIC office. The WIC office could then approve or decline to authorize the item for future sales.

The proposal foundered on the issue of who would pay for the unauthorized items. FCS could not approve a system that entailed knowingly reimbursing retailers for ineligible items. Representatives of the large chain stores were unwilling to give their stores the option to allow transactions for which they might not be reimbursed. NPC argued that reimbursing retailers for a handful of unauthorized items was a small price to pay for significantly enhanced service to retailers and recipients, when far more unauthorized items are purchased under the current system. NPC further argued that the state could be given sufficient control over the system to prevent retailer abuse. With the implementation experience behind him, Wyoming's EBT project director

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[2] Each retailer has been provided with a list of WIC prescriptions and their components.

now thinks such a scheme could be valuable as a tool for the initial implementation period, though not practical as a mechanism for routine UPC updates.

3.3 LINKING THE WIC DATA SYSTEM TO THE EBT SYSTEM

The EBT system must exchange information with the main program data systems for both WIC and FSP. Most important, the program data systems must provide information on who is eligible for what benefits when. Both the WIC and DFS program data systems had to be modified to support the new data exchange functions, requiring substantial time and effort. In the WIC case, the EBT need was complicated by a more general desire to update and improve the program data system.

At the start of the planning for the current demonstration, the Wyoming WIC office recognized that its existing information system had been a source of some problems in the earlier "proof of principle" EBT pilot. To improve the efficiency of the WIC information system and make it more compatible with EBT issuance, Wyoming decided to have the system rewritten in a new environment, migrating from a system written in the mainframe language, COBOL, to a PC-based system written in FoxPro.

During the earlier pilot, separate vendors had developed the EBT system and the WIC interface, and they did not work together effectively. For this project, the WIC software developer, Andersen Consulting, acted as a subcontractor to NPC, an arrangement that offered potentially better coordination of the two development efforts. Even the linked efforts, however, encountered some problems.

For example, a delay in completion of the WIC software led to both strain and delay in implementing the EBT system. The WIC software became operational just two months before cases were converted to EBT. With this limited shakedown period, staff were still not completely familiar with the new system and problems were still being encountered when implementation of the EBT system had to begin.

Moreover, the major design and development challenges of the WIC EBT system tended to draw most of the attention of NPC and state WIC staff, perhaps leaving less for the seemingly more routine issues of the WIC program system. Another result, FCS Regional Office staff feel, is that the new WIC system did not include all of the functional improvements that might have

been possible. For instance, Wyoming deferred implementing local area networks (LANs) in the larger clinics in order to avoid adding yet another untried system element at the same time. Regional office staff argue that an up-to-date and fully operational WIC data system is a prerequisite to an efficient EBT system.

3.4   LINKING WIC NUTRITION EDUCATION WITH BENEFIT ISSUANCE

The design of an EBT system is shaped by programmatic needs as much as by technological requirements. In Wyoming, the WIC program's nutrition education agenda had a significant influence on the design of the system.

Technologically, there is nothing about the PayWest system that requires the client to go to the clinic for benefit authorization. Because client contact is essential for other aspects of the WIC program, however, Wyoming wanted to continue the practice of bimonthly clinic visits at which clients receive nutrition education and referrals to medical care and other services. To make sure that the visit occurs, EBT benefit authorization for the next two months occurs during the office visit.[3] After the nutrition education session, WIC staff authorize benefit release by triggering an electronic message to the NPC host computer and, as required by WIC regulations, clients sign a log acknowledging receipt of their benefits.[4]

The information available from the PayWest system presents further nutrition-related opportunities that the Wyoming WIC staff have not yet had time to explore. For instance, the EBT system can provide a record of exactly which prescription items the recipient actually redeems. WIC staff anticipate that such data could be used to tailor nutrition counseling to individual needs. If, for instance, a recipient fails to purchase a prescribed item, a nutrition counselor would know to inquire about that food. The counselor might learn that the recipient was allergic to the food or did not know how to prepare it. A change in prescription or further education could then potentially improve the nutritional impact of the WIC benefit. In its current

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[3] This requirement can be overridden and benefits issued without a client visit in specifical circumstances (such as winter storms).

[4] Although this process authorizes the release of two months' benefits, only the first month is immediately downloaded to the store terminals. The second-month prescription may therefore be changed at any time before it is downloaded at the beginning of the second month.

form, the nutrition counseling information is voluminous and highly detailed. It is not clear whether batch reports will be useful for clinic staff, or that further refinement to the reporting system will be necessary.

3.5   COORDINATING WIC AND FOOD STAMP OPERATIONS

The joint WIC and food stamp EBT system required a collaboration between two operationally separate programs housed in distinct departments of the state governmental structure. Although the two programs have an overlapping clientele and highly compatible objectives, they had little history of communication and coordination.

The two programs have distinctive styles that might well have led to misunderstandings. The smaller WIC program, viewed within the state structure as an adjunct to health care, emphasizes individual service to clients in a setting that resembles a doctor's office more than a welfare office. WIC benefits are supplemental food, and benefit delivery is just one aspect of a program that includes health assessment, nutrition education, and the promotion of breast-feeding. DFS serves much larger caseloads and delivers "safety net" cash and food stamp benefits that may be a household's primary source of income. DFS focuses strongly on accurate certification and issuance of benefits. It has the well-developed procedures and tight administrative controls necessary for consistent treatment of a large number of households (and compliance with more detailed federal regulations).

Differences in administrative style and priorities, however, presented no insurmountable hurdles to the project. Staff from the two agencies were able to adopt a common focus on the clients. The relatively small scale of the programs may have facilitated relatively easy communication, and the consensus-building style of the EBT project director doubtless helped. Thus the agencies were able to collaborate effectively in dealing with a number of the issues resulting from the fact that households receiving both WIC and food stamp benefits would get only a single PayWest card.

In the PayWest system, the Social Security Number (SSN) of the head of household is the key variable that allows the system to assign benefits issued by both programs to the same card. Although this may seem a straightforward design feature, implementation was far from straightforward. The WIC program had never required clients to document their SSN. No SSN

was recorded for some WIC recipients, and others had provided incorrect SSNs. Although DFS required clients to provide documentary proof of their SSN, the number was not a key variable in the program data system.

To complicate matters further, WIC tended to consider the mother in two-parent families as the head of household, because mothers typically redeemed checks for children in the paper system. At DFS, on the other hand, the male was often considered the head of household in two-adult households.

During the early implementation process, WIC, DFS, and NPC staff spent many hours solving individual problems with card and benefit issuances that stemmed from SSN mismatches between the WIC and DFS information systems. Local DFS staff strongly recommend that recipient data be matched against Social Security Agency data prior to implementation of EBT.[5]

Related issues affected training, which was difficult to coordinate for dual clients (those receiving both WIC and FSP benefits). Some clients were confused about whether they needed to attend trainings at both programs or just one, although DFS included a note in its training announcement instructing dual clients to go the WIC office for training. The card issuance logistics were made more complicated by the fact that each program office converted half of its clients to EBT in March and the other half in April. Because the client files for each office could not be merged, there was no way of knowing for dual clients whether they were part of the first wave of conversion for both programs, the second wave for both, or if they converted on one program before the other. Dual clients trained at the DFS office got less attention to WIC-specific issues than the clients trained at the WIC office. Those trained at the DFS office tended to need more help using the PayWest system for WIC, and were often encouraged to attend a second training at the WIC office.

3.6 USING THE CARD FOR HEALTH STATUS INFORMATION

Smartcards have attracted interest because of their ability to store far more data than magnetic-stripe cards and because they store data in a way that allows repeated updating of the

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[5] WIC staff are concerned that requiring participants to provide SSNs could discourage some from participating; however, the alternatives present other difficulties, especially if additional programs are to be added to the card.

stored information. This capability presents EBT designers with the opportunity to use the card for purposes beyond benefit transfer, but may require considering tradeoffs between those additional uses and operating efficiency for the central EBT functions.

An innovative feature of the PayWest card is its use to store health status information on WIC recipients. A portion of the memory capacity of the PayWest card is devoted to the storage of "Health Passport" information. In this area, the card holds WIC certification data, CDC survey data, and immunization records for up to four children.[6] Currently, the main function of the information is to facilitate transfers between WIC clinics (within the EBT demonstration area). The data also help clinic staff track immunization records, allowing them to make referrals easily if needed.

WIC staff were very concerned about the confidentiality of the Health Passport data. As a result, the card was designed with four areas devoted to the Health Passport data, each with progressively more restricted access. Furthermore, the card only communicates this data with the terminal in a mode that is more secure but much slower than open communication. This configuration taxed the capacity of the read/write function, with the result that the physical writing of Health Passport data for a new card took five to ten minutes. This slowed down card issuance during the mass conversion of WIC clients to EBT to such an extent that WIC suspended use of the Health Passport data for the implementation phase. After the conversion process was completed, the Health Passport data have been entered on the card during the recipient's certification or recertification appointment. It takes approximately two and a half minutes to initialize the Health Passport section of the card (to prepare it to receive data on individuals). About two minutes are required to load data for each household member receiving benefits on the card (benefits for up to four individual clients can be loaded onto a single card).

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[6] The four card areas include the following information: The "Public Access Area" contains household identification information (cardholder name, address, phone, etc.) and individual immunization information (participant name, birth date, immunization type, date due, date received, etc.). The "Medical Care Providers Area" has fields for individual height, weight, delivery/due date, medications, etc. The "WIC-Accessible Only Area" has fields for household information (WIC family ID, clinic number, income, household size) and individual information (risk factors, certification date, breastfeeding status, etc.). Finally, "CDC Information" contains information tracked for the Centers for Disease Control and Prevention, including years of education, previous pregnancies, weight gain/loss, and fields for health behavior indicators, e.g., cigarettes per day during the third trimester. The total memory required for the compressed Health Passport data is 972 bytes.

Although the Health Passport slows down the recertification process, at least when data are first entered, it is intended to save time during the transfer process. It is also more accurate than a key-entered transfer, reducing the number of errors made during the transfer process.

FCS has contributed funding to a demonstration in Laramie County of an expanded version of the Health Passport aspect of the PayWest card as part of the Western Governors Association's (WGA) Health Passport Initiative. Because the slow read/write speed of the PayWest card is likely to limit its acceptance for widespread use, the WGA plans to go forward with a system that uses a larger capacity smartcard.

Cards that incorporate larger chips have come on the market since the development of the PayWest system. A combination of greater memory capacity and improved operating systems on the newer generation of smartcards has the potential to dramatically reduce the time required to write data to the card. As the smartcard market expands, larger capacity cards may become more cost effective, and more attractive for system designers. This could have implications not only for non-EBT uses of the card, but for some of the difficult EBT issues described in the next chapter.

CHAPTER FOUR

INTEGRATION WITH RETAILER OPERATIONS

With an EBT system, and particularly with an EBT WIC system, states enter into a more complex relationship with retailers than is necessary with paper-based issuance. Although this more intense relationship has benefits to retailers and to the state, it is fraught with technical, political, and business challenges.

This chapter examines the need to integrate EBT WIC with existing store systems, examining the food retailers' point-of-sale environment from two perspectives. First, we consider retailers' requirements for front-end operations and equipment. Second, we examine the multiplicity of equipment and configurations that confront designers of EBT systems. We then turn to the larger issue of how retailer acceptance of a smartcard-based EBT system is conditioned by developments in the electronic funds transfer industry. Of key concern are recent efforts to establish standards for the smartcards used commercially and in EBT systems.

Fundamental to all of this discussion is the critical importance to an EBT system of retailer acceptance. This is partly a matter of the economic and technical issues discussed below, but it is also partly a matter of listening to and responding to retailer concerns; in this regard the Wyoming EBT project was exemplary. Staff, particularly the EBT project director, did an extraordinarily thorough job of bringing retailers into the design and development process. Retailers were recognized as full stakeholders at all levels and stages of the process through their participation in an active and empowered Retailer Advisory Committee. Through this process, retailers asserted their concerns very early in the demonstration. They insisted that the project would not go forward unless the state could meet their requirements, which included (1) full integration of the EBT system with store scanning systems; (2) limiting the pilot to Natrona County until full integration was available; and (3) authorization to use EBT equipment for commercial electronic payments. Ultimately the state agreed to some but not all of these terms, a number of more detailed issues were resolved to the satisfaction of retailers, and the project proceeded with strong retailer support.

4.1 The Food Retailer's Point-of-Sale

EBT systems operate at the checkout counters of food retailers; consequently, any EBT system becomes part of retailers' front-end operations. Retailer acceptance of EBT is not to be taken for granted. Some proposed on-line EBT systems for food stamps foundered because retailers resisted the introduction of EBT. The State of Wyoming system has succeeded in turning retailer reluctance into acceptance and even support. To have similar success elsewhere, EBT system planners will need to be well informed about the environment into which they intend to introduce their system.

Retailer Requirements of an EBT System

Retailers' requirements of an EBT system are primarily driven by their need to handle customers as quickly and efficiently as possible. Avoiding long lines at peak flow periods is critical, but delays and confusion at any time are undesirable. Retailers manage their resources of equipment and labor to maximize "throughput," i.e., the rate at which customer transactions can be processed. To gain retailer acceptance, an EBT system must speed the processing of transactions or, at least, do no harm. In addition, retailers are concerned about the additional equipment required for EBT. Does it clutter up the checkout area? Is there potential for confusion among customers or clerks? Retailers will be very concerned if the extra equipment creates delays for any reason, such as system downtime or user error. At some stores, rapid turnover of staff makes training time an important issue.

Retailers typically manage all the space in their stores carefully, but the area around the cash register is especially valued. Items are placed in this area to encourage "impulse buys," an important source of revenues. Additional equipment required for EBT transactions may compete for space with these items.

Retailers are especially concerned about adding a payment terminal in a store where one or two electronic payment terminals are already present. Stores that accept credit or debit cards may have a payment terminal, PIN pad, and printer in addition to a cash register. Some stores also have an automated check authorization device that reads magnetic ink on checks and transmits messages to a host computer for authorization purposes. Retailers are unwilling to add extra equipment to the front-end operations of their stores unless there is a clear benefit for doing so.

In Wyoming, retailers agreed to accept a payment terminal dedicated to the EBT system on the condition that a better solution be developed before the system is implemented statewide. They also requested, but did not receive, the right to do commercial transactions on the PayWest terminals during the demonstration.

Multiple Configurations at the Point-of-Sale

The EBT system designer must confront the technological challenge of interfacing with differing devices used to process transactions. Food stores vary considerably in size and sophistication, from large chain stores to very small stores, and they employ a wide variety of equipment at the point-of-sale. Newer and larger stores are likely to have the latest equipment, whereas smaller stores may have purchased older, used equipment. In Wyoming, the major chain stores have the capability to accept on-line credit and debit payments at the point of sale, but most independent stores do not have this capability. Most stores use electronic scanners to enter price information, but some do not have scanning equipment.

Exhibit 4-1

WIC-AUTHORIZED RETAILERS IN THE SIX-COUNTY DEMONSTRATION AREA

Total WIC-authorized stores	39
Stores with scanning systems	24
Stores with electronic payment systems (credit and/or debit cards)	18

Even the most technically advanced stores in Wyoming operate at least two technologically independent systems at the checkout counter: a scanning system linked to an electronic cash register (ECR), and an electronic payment system. In these stores, the transaction total is communicated to the payment system manually by the checkout clerk, who reads it off the ECR. Because a WIC EBT system is on the one hand a payment system, but on the other hand requires access to item-level information, the way EBT works varies according to the type of equipment used in each store.

Four basic configurations are typically found at food retailers' cash registers. First, many stores do not have scanning systems; checkout clerks enter price information into the cash register by hand. The second configuration, the most common among WIC-authorized stores in Wyoming,

has a scanning system driven by a minicomputer. In this type of system, the cash registers are little more than dumb terminals. They may do the simple calculations required to get transaction totals, but they rely on a minicomputer to provide price information. For each scanned item, the scanning system sends a message with the UPC over a local network to the store's minicomputer. The computer attaches price and descriptive information to the code and sends it back to the ECR, which prints the information on a receipt and adds the value to a running total.

The third configuration is more like a network of PCs doing largely independent processing. Although they are uncommon now, many industry observers expect that the next generation of store scanning systems will be based on higher-functioning ECRs that do not rely on a separate computer for price information. This type of system may be accessible to smaller stores that cannot currently afford scanning equipment.

The fourth configuration, not currently found in Wyoming, also may become more common in the future. In this system, the same computer that drives the scanning system also generates electronic payments.

Exhibit 4-2

EBT/STORE SYSTEM INTERFACE CONFIGURATIONS

Store System Type	Stores in Demonstration Area	Wyoming EBT Interface Solution
(1) No scanning system	15	Stand-aside EBT terminal with hand-held scanners.
(2) Minicomputer-driven scanning system with standard configuration	22	EBT system retrieves UPC data from scanning system network.
(2) Minicomputer-driven scanning system with nonstandard configuration	1	Stand-aside EBT terminal with hand-held scanners. Double scan required.
(3) PC-type ECR	1	Integrated interface under development.
(4) Minicomputer-driven scanning system with integrated electronic payments system	none	Untested. Requires retailer to do programming, allows retailer control over system.

An EBT system for WIC must extract item-specific information (UPC and price) from each of these systems.[1] For stores without scanning equipment (Configuration 1), item information is entered into the EBT system with a special hand-held scanner. Most stores in the Wyoming demonstration have scanning equipment (Configuration 2), and all but one have one of four standard types of front-end equipment. NPC developed systems for extracting information directly from the four main scanning systems. In the remaining Configuration 2 store, the hand-held scanner was used, which required items to be scanned twice (once for the store's ECR and once for EBT). Finally, NPC also developed an integrated solution for the one Wyoming store that had a PC-type scanning system (Configuration 3), although this effort was not undertaken during the main development phase.

Developing the interfaces for the four main scanning systems was a particularly challenging part of the demonstration effort, and is discussed in more detail below.

4.2 INTERFACING WITH THE STORE SCANNING SYSTEM

NPC's approach to the scanning interface connects the EBT controller PC to the store's scanning system network as well as the PayWest terminal. The controller PC "listens" to the store's scanning system network. A buffer in the controller computer stores a copy of the UPC code for every item purchased at each ECR equipped with the PayWest terminal. At the end of each transaction, the computer clears the buffer unless it gets the message that WIC will be used as the method of payment. If WIC is used, the computer then communicates with the PayWest terminal, which has in its memory the balance for each food type as recorded on the recipient's PayWest card. For each approved item purchased, the appropriate balance is decremented. The PayWest terminal then writes the new balances onto the card. The controller computer stores a record of the transaction with item-level detail, which is forwarded to the host computer as part of the daily settlement process.

Early in the design process, NPC surveyed all WIC- and FSP-authorized retailers in the demonstration area and determined that four basic scanning systems were used by 21 of the 24 retailers with scanners (one retailer has subsequently upgraded to one of the four standard systems).

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[1] Note that this automated data capture is not required in an EBT system serving only the FSP. In a food stamp transaction, the only information needed is the total dollar amount of the food stamp purchase. This is equivalent to the information needed in a standard electronic payment transaction, in which the checkout clerk reads the dollar amount from the cash register and enters it into the payment terminal.

NPC expected that a commercially-available integrated circuit with proprietary software would be able to translate the messages on the four store systems into a common language. If this had been true, the PayWest system developers would have been able to develop one set of terminal/controller software code that would work with all four systems. As it turned out, even though NPC adopted a modular approach to minimize the differences in the software for the different configurations, it was necessary to write considerable special code for each type of store system, substantially increasing the development effort required for the interface between the scanning system and the PayWest system. To further complicate the interface issue, the store scanning systems have multiple parameters that can be set at the store level. The PayWest system had to be able to take into account the various settings possible at different stores. Finally, a few stores with one of the four main systems had nonstandard configurations that required special development solutions.

NPC overcame all of these obstacles with only a minor delay to the implementation schedule. Nevertheless, the multiplicity of scanning system configurations and the need to "tune" the EBT system to operate with each configuration represent major development efforts and considerable expense. A larger state with more retailers might present a need for more special interfaces, and the development need might continue over time as store systems evolve.

4.3   EBT AND COMMERCIAL PAYMENT SYSTEMS

The primary issue of concern to retailers about a smartcard EBT system is the integration of EBT with other electronic payment systems. In essence, retailers do not want a smartcard system that handles only WIC, or WIC and food stamps, if a separate electronic system must handle other forms of payment. Wyoming retailers accepted the PayWest system because it was part of a demonstration taking place in a limited area. They voiced concerns early in the design process, however, and won a commitment from the state that the issue of integration with other payment systems would be addressed before the program was expanded statewide. Even though the EBT equipment was installed at no cost to the retailer in the Wyoming demonstration, retailers assume that at some point their own investment would be required, if only to have their store equipment be compatible with EBT. Retailers do not believe that the volume of transactions represented by WIC and the FSP alone can justify such an investment.

The retailer's perspective has much to do with the economics of commercial electronic payments. The technology for on-line debit transactions has been available for two decades, but food retailers across the country have only gradually made the investment in commercial debit and credit equipment. Because retailers pay a sizable fee to credit card companies for each transaction, they have generally declined to offer credit card purchases unless they felt that they could attract new business by doing so (or protect their business from going to competitors offering the service). Debit transactions were initially offered without fee to retailers (fees were charged instead to individual cardholders). Retailers saw debit cards as an attractive alternative to accepting checks, which involved a deposit fee and potential risk of loss. Debit card processors have now begun charging retailers fees for debit transactions and, although the fees are still small and not universal, many retailers fear the direction of the trend. Some look forward to the development of commercial smartcard payment systems, because transactions can be conducted off-line and may therefore entail lesser fees.

A WIC- or FSP-authorized retailer already has program participants as customers and gets no new business from installing a smartcard terminal that only allows EBT payments. A smartcard EBT system is much more attractive if the terminal used for EBT can also handle commercial smartcard or magnetic stripe card transactions.

Currently, there are virtually no fully "open" smartcard systems in existence. Every smartcard system works only with the cards issued specifically for that system, generally using cards made by a single manufacturer. Because there has been no standardization within the smartcard industry, terminals have been programmed to work only with a particular manufacturer's card. Only cards issued by the State of Wyoming will work on the PayWest system, just as French telephones will only accept cards issued by the French telephone company.

These systems contrast with on-line credit and debit card systems. The credit card associations set technical and business standards for their systems, and virtually any financial institution that meets those standards can issue cards, which may be made by many different manufacturers. Similarly, banks issuing debit cards belong to networks that set technical standards. An ATM installed by one bank can read a card issued by another bank, and banks can buy ATMs and cards from a variety of manufacturers. The level of industry standardization in on-line credit and debit is such that consumers can now use either credit or debit cards issued in the U.S. throughout the industrialized world.

Because there has been no industry standard for smartcards and smartcard terminals, retailers are reluctant to accept terminals that may be incompatible with a yet-to-be-developed industry standard, even if the government provides the terminals. Retailers are also concerned about interoperability between the EBT systems of different states.[2] The major chains operate stores in many states and are reluctant to customize their front-end operations to interface with different EBT systems. Safeway, for instance, has one software development group that builds the systems used in Safeway stores throughout the country. Technical support for the systems is provided by regional offices. In this environment, minimizing variations among stores becomes a high priority.

The Movement Toward Industry Standards

In an effort to address some of these concerns, NPC urged FCS to develop specifications for card operating systems that would be used for the next generation of smartcard-based EBT systems. A standardized EBT smartcard operating system would contribute to state interoperability and might encourage the choice of an industry standard for commercial smartcard use that was compatible with the functions required for an EBT system. FCS staff and technical consultants began exploring the possibilities in 1994.

The world's three giant credit card associations—EuroPay, MasterCard, and Visa (EMV)—were already working in what turned out to be a related effort to establish industry standards for smartcards. The first set of EMV standards, published in June 1995, defines a set of commands that all smartcard operating systems must be able to execute. The commands relate to basic card functions such as reading and writing data and authentication procedures. The current generation of smartcards does not meet the specifications, but card manufacturers are racing to produce cards that will conform to the EMV standard.

The basic commands specified in the initial EMV standards fall far short of what would be needed to support EBT functions. A further set of EMV standards to be published late in 1996, however, will come much closer. They focus on "stored value," or "electronic purse," uses of the card in commercial transactions. These commercial applications are quite similar to EBT in that they involve maintaining an "account" on the smartcard and incrementing and decrementing the account.

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[2] The Wyoming project has attempted to address this issue by working with a group of five neighboring states. For example, the categorization of WIC prescription items fits within the framework adopted by this group.

The specifications supporting these uses will allow the functions to be performed more efficiently and securely than is possible with current card operating systems. In particular, they will allow more processing to be done inside the smartcard itself rather than in the terminal, which will both speed up transactions and provide greater protection against the possibility that someone could illegitimately change the amount of value stored in the card.

Meanwhile, FCS in early 1995 circulated a preliminary set of specifications for the functionality that would be required in smartcard EBT systems. The specifications were compatible with and complementary to the first round of EMV specifications, and look toward the stored value specifications. FCS plans to release an updated and more detailed version of the specifications.

These developments—together with a number of major new commercial smartcard payment system initiatives that have been announced—mean that the field can be expected to evolve rapidly in the next few years. A critical factor will be the speed with which standards are widely adopted by card and terminal manufacturers, because that will strongly influence the retailers' "business case" for investing in equipment. States contemplating smartcard EBT systems will need up-to-date information on the status of the industry in order to make sure that they take the best possible advantage of the existing capability and maximize their systems' compatibility with the commercial sector.

CHAPTER FIVE

ECONOMICS OF OFF-LINE EBT

A decade of experience with EBT in an on-line environment suggests that cost, not user resistance or technology challenges, is the critical factor governing the widespread acceptance of a new benefit issuance system. This chapter examines the cost consideration that states must take into account in evaluating the feasibility of EBT.

It is not yet known whether an off-line EBT system for WIC and FSP is a cost-efficient alternative to paper systems, in Wyoming or elsewhere. The evaluation will compare the electronic and paper system costs for both programs in the Wyoming demonstration, but that analysis will not be available until mid-1996. This chapter therefore draws on the information currently available to provide a perspective on the issue. It examines the costs of the paper WIC and FSP systems in Wyoming, because these represent the benchmarks against which EBT costs will be judged. It also reviews briefly the findings of previous cost evaluations of EBT systems, which may be indicative of the prospects for the Wyoming system. As a backdrop to those issues, however, we first comment on the regulatory and policy environment in which EBT costs are assessed.

5.1 THE REGULATORY AND POLICY FRAMEWORK FOR CONSIDERING EBT COSTS

Because there are no regulations governing WIC benefit issuance via EBT, federal FSP regulations provide the key regulatory structure for combined WIC/FSP EBT implementation. These regulations mandate that food stamp EBT systems must be "cost-neutral" to the federal government. The federal coupon issuance cost, which becomes the EBT cost cap, is measured during the four quarters prior to EBT startup. States have the option of operating an EBT system with higher costs, but federal reimbursements will not exceed the cap.[1] These regulations apply

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[1] During EBT startup, states can claim 50 percent federal reimbursement for all costs until the EBT system goes live, even if the costs are higher during this period than the cap amount. If federal payments for EBT operating costs for a seven-year period including start-up exceeds the total federal cap amount for that period, however, the state is responsible for the excess. This arrangement allows states to use any savings they realize in operating costs to cover start-up expenses.

to on-line EBT systems; although no regulations yet exist for off-line systems, it is likely that similar cost restrictions would apply if legislation authorizing off-line EBT for the FSP were to be enacted.

There are no federal regulations regarding EBT costs for WIC. With most state agencies under budget pressure, however, cost-competitiveness exists as a practical consideration for any WIC EBT system. One can expect policymakers to require that any EBT system under consideration compare favorably with paper system program costs. In Wyoming, the state legislature has required that the EBT system be cost neutral or produce cost savings for WIC administration. For the FSP, the legislature demanded proof that the required state matching funds for EBT startup would pay off in reduced FSP operating costs over the long run. In addition, the state has declared a hiring freeze in an attempt to downsize; available resources for the EBT system are also subject to these personnel ceilings.

Paper-based Issuance Costs: The Standard for Cost Comparison

A state can assess the feasibility of implementing a cost-competitive EBT system by first determining the costs of its paper system. States with relatively high paper costs will have a higher cost cap—in effect, an easier target for EBT costs to meet. Those with low paper system costs will need especially cost-efficient EBT systems to be competitive.

Paper System Costs for the Food Stamp Program. Previous evaluations of EBT systems have established a general framework for measuring administrative costs for issuance. Applying that framework in Wyoming, costs were estimated for five major issuance functions:

- Authorizing access to benefits—including state and local costs for authorizing and issuing identification cards and the local staff time spent authorizing the issuance of food stamps.

- Delivering benefits—including the cost of printing coupons (federal), mailing coupons (state), and dealing with problems in coupon delivery.

- Crediting retailers and banks—mostly the cost of Federal Reserve Bank processing of redeemed coupons.

- Managing retailer participation—including FCS Field Office and Minneapolis Computer Service Center costs for maintenance of data on retailers and

redemptions, producing and distributing of redemption certificates, and providing program information to retailers.

- Reconciling and monitoring issuance system—including FCS National Office costs and state oversight, reconciliation, and reporting costs.

The baseline cost per case per month for food stamp coupon issuance in Natrona County is $2.85 (see Exhibit 5-1). The largest components of the baseline coupon issuance costs in Wyoming are mailing expenses and the cost of printing coupons. Federal Reserve Bank of Wyoming's coupon issuance cost is at the low end of the range of costs measured in EBT studies.

Exhibit 5-1
COMPONENTS OF FOOD STAMP COUPON ISSUANCE COSTS[a]

Cost Category	Major Components	Cost per Household per Month
Authorize access to benefits	Computer processing charges for creating authorization files, printing authorization cards, and issuing food stamp identification cards; mailing costs for identification cards; and local labor for authorizing benefits	$0.51
Deliver benefits	Mailing costs, including postage and state office labor, and the cost of printing and distributing coupons	$1.93
Credit retailers and banks	Federal Reserve Bank processing	$0.17
Manage retailer participation	FCS Field Office labor and National office labor and computer processing charges	$0.10
Reconcile and monitor issuance system	State and federal labor for reporting and oversight	$0.14
Total cost		$2.85

[a] Estimate for Natrona County based on time study data and administrative cost records for the first quarter of 1995.

Paper System Costs for WIC. Wyoming is the first state to test EBT for WIC, and thus is the first state for which baseline costs for the paper system have been estimated. Wyoming WIC employs a decentralized paper-based issuance system. The WIC information system, which resides in a PC at each local office, prints checks for individual clients during their bimonthly office visit. This system involves no centralized data entry, check production, or distribution.

Rather, local WIC office staff spend time during each client visit printing checks and, with central office support, maintain the PC and printer and manage check stock. The baseline cost analysis includes the following five categories of costs:

- Authorizing access to benefits—including the cost of identification folders and the local staff time to prepare and issue the folders.

- Delivering benefits—including the time spent by local staff issuing benefits, scheduling appointments, and dealing with issuance problems, as well as a portion of the cost of buying and supporting the hardware and software for the WIC information system used to issue WIC checks.

- Crediting retailers and banks—reflects the bank fees for processing WIC vouchers and the fees for managing the settlement account.

- Managing retailer participation—including vendor management activity by state and local staff.

- Reconciling and monitoring issuance system—including time spent by central office staff reviewing voucher exception reports, resolving exceptions, and preparing federal issuance reports.

For the Wyoming EBT demonstration, the baseline cost in Natrona County is estimated to be $2.12 per household per month.[2] In Wyoming, the biggest contributors to the overall cost for benefit issuance are the bank fees for processing WIC checks, the time spent by local staff scheduling appointments for check pickup and issuing checks, and the cost of the computer hardware and software used to issue checks (see Exhibit 5-2).

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[2] In WIC, a "case" is usually considered to be an individual woman or child. Because EBT combines benefits for all household members on one card, we use the cost per household as the main measure of WIC issuance cost for this analysis.

Exhibit 5-2

COMPONENTS OF BASELINE WIC ISSUANCE COSTS[a]

Cost Category	Major Components	Cost per Household per Month
Authorize access to benefits	Local clinic labor for preparing and issuing WIC ID folders and instructing new clients in procedures related to WIC checks	$0.26
Deliver benefits	Blank check stock, local clinic labor to issue checks, and a portion of the cost of the WIC information system	$0.88
Credit retailers and banks	Bank fees for WIC checks	$0.62
Manage retailer participation	State office labor to maintain food package tables on WIC system and process retailer applications, local vendor monitor labor	$0.18
Reconcile and monitor issuance system	State office labor to reconcile WIC checks, resolve exceptions; local office labor to back up WIC data	$0.17
Total cost		$2.12

[a] Estimate for Natrona County based on time study data and administrative cost records for the first quarter of 1995.

EBT System Costs: What to Expect

The Wyoming smartcard demonstration is still underway, and results of the cost study are not expected until mid-1996. That information will provide a firmer basis for projecting future smartcard-based EBT system costs. Until then, planners can draw perspectives from the experiences of a food stamp EBT system in Dayton, Ohio, and of several on-line EBT demonstrations.

Off-line EBT Systems. The Wyoming demonstration has two precedents: the Dayton, Ohio, demonstration and the "proof of principle" pilot in Natrona County, Wyoming. Both tests suggest that off-line EBT has a chance of being cost-competitive with paper benefit delivery, but that a favorable result is far from automatic, especially in a system serving as few cases as Wyoming's.

The Ohio EBT system covers a six-ZIP-code area in Montgomery County and delivers only FSP benefits. The system serves 11,000 food stamp households; 95 retailers are participating.[3] The average monthly administrative cost under the EBT system was $8.21 per FSP case month, a $5.32 increase over costs for the paper coupon system. It is estimated that costs will decrease as EBT operations continue in the demonstration area, and that expanding the demonstration area will further reduce administrative costs of benefit issuance. The evaluation of the Ohio EBT system projected that, with a large enough expansion, off-line EBT costs could potentially compete with both paper and on-line FSP costs.

Wyoming's WIC EBT pilot project, which began in 1991, divided the Natrona County WIC caseload into test and control groups. The cost analysis was more limited in scope than other cost studies reported here, which means the estimates are not directly comparable to the other studies. The evaluation reported that per-family administrative costs for the group using the smartcards were $2.67; the comparable per-family costs for the WIC check group in the same period were $1.86.

On-line EBT Systems for Food Stamp Program. Although the key costs for on-line systems are different from those of a smartcard-based system, the precedent of the on-line EBT demonstrations is instructive. Exhibit 5-3 presents the cost analysis results from three on-line EBT demonstrations: Bernalillo County, New Mexico; Ramsey County, Minnesota; and statewide in Maryland. Each of the demonstrations showed some cost savings, although the Maryland system showed a significant savings only when FSP costs were considered independently of the cash programs on the system. As this suggests, one of the key factors driving the cost-efficiency of EBT is the mix of programs that issue benefit through the system. In general, more programs means a larger base of recipients over which to spread fixed costs, and therefore more savings. Cash programs that issue benefits by mailing a check to recipients, however, have fairly low paper issuance costs. Also, cash EBT programs typically give recipients access to ATMs, but the banks that own the ATMs charge card issuers a fee for each transaction. This combination of factors can make it more difficult to achieve overall cost efficiency gains when cash programs are included on the EBT system.

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[3] *The Impacts of the Off-line EBT Demonstration on the Food Stamp Program, Volume I—Impacts on Administrative* Costs, U.S. Department of Agriculture, April 1994.

Exhibit 5-3

IMPACT OF EBT SYSTEMS ON FOOD STAMP
ISSUANCE COSTS PER CASE MONTH:
SELECTED DEMONSTRATIONS

	Paper Cost	EBT Cost	Difference
Off-line Systems			
Wyoming	$2.85	NA	NA
Ohio[a]	2.89	$8.21	$5.32
On-line Systems			
New Mexico[b]	4.04	3.07	(0.97)
Ramsey County, MN[b]	4.53	4.38	(0.15)
Maryland[c]	3.89	3.85	(0.04)
Maryland (FSP only)[c]	4.71	3.92	(0.79)

[a] *The Impacts of the Off-line EBT Demonstration on the Food Stamp Program, Volume 1—Impacts on Administrative Costs.* U.S. Department of Agriculture, April 1994.

[b] Kirlin, J., *et al.*, *The Impacts of the State-Initiated EBT Demonstrations on the Food Stamp Program*, U.S. Department of Agriculture, June 1993.

[c] Logan, C., *et al.*, *The Evaluation of the Expanded EBT Demonstration in Maryland, Vol. 2: System Impacts on Program Costs and Integrity*, U.S. Department of Agriculture, May 1994.

5.2 EBT STARTUP COSTS

As suggested earlier, states contemplating EBT systems will need to consider not only the comparative operating costs of the paper and EBT systems but also the EBT startup costs. These are the costs of designing, developing, and implementing a particular EBT system. The bulk of the cost is typically associated with a vendor contract, but state and local agencies also incur costs to manage the process, participate in decision-making, develop systems and procedures that will interface with the EBT system, and convert cases and local office operations to the new regime.

Startup costs for the Wyoming EBT system totaled about $2.3 million. This is roughly two-thirds of the $3.4 million spent to design, develop and implement the Dayton, Ohio system. The Ohio system was a pioneering effort which served as a model for the Wyoming system. Much of the Ohio system was replicated for the FSP portion of the PayWest system. The bulk of the design and development costs for Wyoming's system are related to the creation of the WIC portion

of the off-line system and the development of interfaces between the NPC host computer and DFS' data system. As Exhibit 5-4 shows, Wyoming startup costs are somewhat higher than startup costs for the on-line EBT systems in New Mexico and Minnesota, at $1.5 million and $1.9 million, respectively.

The cost of starting up and operating an EBT system is an issue of considerable importance to all states. It will drive the choice of technology and of programs included on the systems. Although the Wyoming demonstration will inform these choices, the cost analysis will not be available until mid-1996. The baseline cost analysis indicates that, to demonstrate cost-efficiency, the Wyoming system will have to meet benchmarks that are relatively low, but not unattainably so.

Exhibit 5-4

SUMMARY OF STARTUP COSTS BY PHASE:

Phase	Off-line System		On-line System	
	Wyoming	Ohio	New Mexico	Ramsey County, MN
Design	$338,864	$ 843,555	$183,350	$613,566
Development	1,172,802	1,478,642	642,054	622,736
Implementation	788,138	1,108,001	627,989	653,276
Total	$2,299,804	$3,430,198	$1,453,393	$1,888,578